293* Better satisfaction of cystic fibrosis paediatric patients with autogenic drainage associated to exercise compared to conventional chest physiotherapy

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Objective: To compare the effect of physical exercise (a fitness session) associated to autogenic drainage (AD) to conventional chest physiotherapy (CCP) in clinically stable cystic fibrosis (CF) paediatric patients.
Methods: Patients were randomized to perform, in a crossover fashion, a 20 minutes fitness session including cycling, trampoline, stepping, stretching associated to AD (i.e. "fitness" program) followed, at least three months latter by CCP of same duration ("conventional" program). Sputum was weightened and was the primary outcome. Secondary outcomes were forced expiratory volume in one second (FEV1), and children satisfaction measured with a visual analogic scale graduated from 0 to 100.
Results: Thirty-four patients (18 males), with an average age of 12.1±2.8 years, were randomized. Eighteen began with the "fitness" program first and 16 with the "conventional" program. 2 patients were excluded (one in each arm). There was no difference in the sputum weight (0.6±2.2g, $p = 0.11$) or in FEV1 (1.4±9.0 L, $p = 0.47$) between the "fitness" and the "conventional" program after adjustment on sequence and period effect. However, patient's satisfaction was higher in the "fitness" (88.7±15.8) than in the" conventional" program (71.7±27.4). After adjustment on age, sequence and period effect, this difference remained significant ($p < 0.001$).
Conclusion: Fitness session combined to autodrainage did not improve airway clearance in CF, but is better appreciated than a conventional drainage in paediatric CF patients.
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294 Efficiency of High frequency chest wall oscillation with "The Vest® Airway Clearance System" as daily physiotherapy in outpatients with CF

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Aim: To study the effectiveness of High frequency chest wall oscillation (HFCWO) with "The Vest® Airway Clearance System" as daily physiotherapy for outpatients with CF.
Methods: 15 CF pts (12-adults, 3-children) without symptoms of lung exacerbation were investigated. All patients were on the standard CF respiratory treatment including inhalation of dornase alfa and bronchodilatators. All patients had 1 treatment session (TS) per day with "The Vest®" during 6 weeks. Then they were under the control of physiotherapist for another 2 weeks. TS included Vest-therapy in combination with autogenic drainage. This combination is most effective as was shown in our research in 2007. Adjustment of regime was individual. Lung function tests were done on the 1st day of TS, 6 weeks and 2 weeks after. Patients were asked to fulfill a questionnaire for daily sensations.
Results: the most effective sputum expectoration was seen on the 3rd day of TS and continued during 2 weeks. After there was a phase of patients "stabilization". Mean improvement of lung function was 8%. Duration of HFCWO was about 30 minutes per day. Ten patients noted easy expectoration of sputum within two weeks after the HFCWO was finished. No one of patients had lung exacerbation during the study.
Conclusion: The study has shown that HFCWO with "The Vest®" is effective method of daily physiotherapy for CF pts. It can be used for every day physiotherapy or as 2 weeks courses with a break of two weeks if the device is used by several patients.
However, more studies of the general clinical effect and influence of long term HFCWO with the use of "The Vest®" on frequency of lung exacerbations are necessary. For this purpose long research and supervision over patients is required.

295 Physiotherapy: understanding the cough and spit

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The lifelong management of CF requires continual education for both patients and their carers to enable individuals to be self-sufficient in the day-to-day management of their disease. This is particularly true of physiotherapy management. Primarily, education regarding physiotherapy treatment is directed toward parents in the time following initial diagnosis. Thereafter, education regarding physiotherapy techniques and respiratory physiology tends to be informal and ad-hoc. Recent research conducted within our clinic identified education on physiotherapy matters to be both "overwhelming" and "stressful" to parents. In order to combat this problem we set out to devise a series of age-appropriate learning packages with respect to physiotherapy intervention. In doing so, we aimed to improve patient knowledge through progressively complex themes and subsequently reduce parental burden of care.
Three learning packages were developed in conjunction with a clinical physiotherapist and an educator, targeting 5–8, 9–14 and 15–18 year olds. General themes covering lung physiology, mechanisms of cough and sputum clearance, airway clearance techniques and exercise were repeated throughout the series with increasing complexity. Additionally, the themes were incorporated into age-appropriate activities including picture matching, word find games and comprehension.
Current feedback across the age-groups suggests the packages are easy to understand and provide renewed insight into the mechanisms of physiotherapy treatment. Interestingly, parents are also reporting an improved understanding of the basis for and importance of physiotherapy. We are currently attempting to provide learning packages to all paediatric in-patients, and specifically assess the learning outcomes achieved.

296 Early chest physical therapy (CP) programme in children with cystic fibrosis (CF) diagnosed by newborn screening (NS)

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Introduction: It has been necessary to adapt CP programme at very early ages.
Aims: Description of the CP programme.
Methods: Descriptive study, analyzes the incorporation of the CP techniques adapted to the children age, in CF diagnosed by NS in the period from September 1999 – October 2008. CP begins when a positive sputum culture or clinical respiratory are presents. Weekly sessions are performed in the CFU by a specialist physiotherapist. Once a month the collection of sputum is done. CP techniques changes as the child grows. 0 to 18 months: autogenic assisted drainage. At 18 months: we add game techniques to increase the inspiratory and expiratory volume. At 2 years old: PEP devices are introduced and encouraged cough. At 3 years old: incentive inspiration devices, open glottis exhalation and feel the mucus. At 4 years: breathing control with diaphragmatic work, inspiratory pause and active expectoration. From 5 years: autogenic drainage, devices and cough control.
Results: 37 children included: 13 girls and 24 boys. Average age 4.8 years (4m-9.1 y). 59% presented pancreatic insufficiency. 78.4% required CP; age average start CP 6.7 months 82.8% before a year old. 72.4% have required continuous CP.
Comments: To incorporate CP in daily routine to create an habit in the child and his family, improving their adherence.

Microbiological status	
Chronic *S. aureus*	7 (18.9%)
Chronic *P. aeruginosa*	0 (0%)
Any + culture *P. aeruginosa*	22 (59%)
Chest physiotherapy	29 (78.4%)
Start CP >1 y	24 (82.8%)
Main age to start	6.7 months (32 d–2.2 y)